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BSE Crisis in Japan: A Chronological Overview

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Abstract

In recent years, food-related issues have become increasingly more publicised in developed countries. This holds true for Japan where food-related issues have been drawing attention as a socially significant topic, particularly since the appearance of BSE (Bovine Spongiform Encephalopathy). In 2003 a new governmental office, the Food Safety Commission was established in the Cabinet Office of the Japanese Government based on a new law, "the Food Safety Basic Law". This change of administration was raised by the outbreak of BSE, which is considered to be a drastic reformation of food safety policy in Japan.

In addition, BSE impact was significant not only on administration but also on the agriculture and food industries. It revealed to the public lots of holes in the food related system which have been concealed for years.

In this paper, I would like to show the inadequacy of management before the outbreak of BSE and the subsequent governmental actions and reactions for food safety. Furthermore, problems that still remain after the reformation, such as ban on US beef and policy of blanket testing, will be discussed.

Key words: bovine spongiform encephalopathy, health administration, food sanitation, Ministry of Agriculture, Forestry and Fisheries, Ministry of Health, Labor and Welfare

1. Before 10 September 2001

Before its first case, most Japanese, including the Government, regarded the BSE as having nothing to do with Japan. A brief history of the Governmental reactions to BSE before 10 September 2001, when the first case was substantially confirmed, may show how the disease was allowed to enter the country.

1-1. Competent authorities for BSE have been divided into two Ministries

We should review briefly the administration system of food related issues by the Japanese Government.

Food related issues have been controlled by the MAFF (Ministry of Agriculture, Forestry and Fisheries) and the MHLW (Ministry of Health, Labor and Welfare). While in general, the MAFF managed the agricultural sector in order to protect and promote it, the MHLW was in charge of the food hygiene for the nation's food security (Table 1). This bureaucratic sectionalism had been maintained since the 19th century (1). Although there was an enormous governmental reform in January 2001, the food administration system remained the same.

As far as meat administration is concerned, the MAFF covered the livestock itself and feedstuff, while the MHLW managed the slaughterhouses as well as hygiene management from slaughterhouse to consumers. As probably seen the world over, the Japanese Government has a vertical administrative structure. Each ministry is to provide its own administration within its territory and not to interfere with other ministries. For instance, in terms of food labeling, the MAFF and the MHLW have separate laws. While the MAFF promotes the food industry, the MHLW's function is to maintain food sanitation. Furthermore, while the MAFF has the authority to permit the use of agricultural chemicals based on toxicity tests, the MHLW has the control to set the standards for residual agricultural chemicals.

1-2. United Kingdom 1986–1989

In November 1986, the first BSE case was confirmed in UK, and then it was reported at the OIE (World Organization for Animal Health) General Assembly. The Southwood

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Table 1 Vertically-divided administrative structure

MAFF [Ministry of Agriculture Forestry and Fisheries]	MHLW [Ministry of Health, Labor and Welfare] (Before December 2000, "Ministry of Health and Welfare")
Promotion and protection of agriculture including: 1. Health administration of livestock (before slaughter) 2. Quality management of feedstuff 3. Pesticide 4. Food labeling, etc.	Protecting the people's health including: 1. Food sanitation (Management of slaughterhouse, Food sanitation Standards for restaurants or delicatessen shops) 2. Food labeling, etc.

Table 2 Actions against BSE by the UK Government

Date	Event
Nov 1986	BSE first identified in UK (Central Veterinary Laboratory).
May 1988	"Southwood Working Party", a scientific advisory committee was established.
Jul 1988	Ban on ruminant-derived Meat-and-Bone Meal (MBM) upon the recommendation of Southwood Committee.
Feb 1989	Southwood Report published, which predicted that "the total number of cases would be between 17,000 and 20,000" "The risk of transmission of BSE to human appears remote".
Jun 1989	The Government Tyrell Report recommended to monitoring all UK cases of CJD for 20 years.
Nov 1989	Ban on SBO (Specified Bovine Offals).

Table 3 Actions against BSE by the Japanese Government from 1990 to 1996

	Europe including UK	The Japanese MAFF
Jun 1990	The news "Max the cat was dead from TSE", was sensationally reported in UK.	Delegated experts to UK. Enforced meat import regulation from UK.
Sep 1990	Experts committee meeting on BSE held in OIE (World Organization for Animal Health).	No action.
Nov 1991	Experts' meeting on BSE in WHO.	No action.
May 1992	OIE General Assembly agrees trading conditions for bovine products from countries affected by BSE.	Enhanced regulations in accordance with international standards, but did not ban importation of MBM and its use.
Mar 1996	UK Government expressed its view that the possibility of BSE infecting human beings was not denied.	Banned importation of MBM from UK, but did not ban its use legally.

Table 4 Comparative regulations of BSE in four countries*

	Japan	France	USA	Australia
Banned importation of beef from UK	1951	Mar 1996	Dec 1991	Mar 1996
Banned importation of living cattle from UK	Jul 1990	Aug 1989	Jul 1989	May 1988
Banned importation of MBM from UK	Mar 1996	Mar 1996	Jul 1989	1966
Banned ruminant products to feed domestic cattle	Sep 2001	Jul 1990	Aug 1997	Oct 1997

* The delay of the action of Japan can be clearly read here.

Working Party was established in May 1988 to examine the implications of BSE in relation to both animal health and to advise the Government on any possible human health hazards. Since meat-and-bone meal (MBM) was suspected as the original source from an epidemiological study, the British Government banned the feeding of ruminant protein. In 1989, Southwood and Tyrell reported that "the total number of cases would be between 17,000 and 20,000". According to Southwood, "The risk of transmission of BSE to human appears remote" and that it had remote possibility of crisis (2). However, there were scholars who alerted the public on the dangers of BSE to human beings (3). Reflecting such a situation, the British Government banned eating SBO (specified bovine offals), what we call the dangerous parts, based on the precautionary approach in 1989 (Table 2).

1-3. Japan 1990–1996

Since receiving much attention in Europe, the Japanese Government had gradually enforced BSE-related regulations, albeit inconsistently (4).

First, the MAFF delegated experts to UK in June 1990. In July, MAFF enforced on meat imports regulations from the UK which consisted of prohibition on the importation of living cattle, introduction of mandatory process to heat meat-and-bone meal, and so on. The Japanese Government did not react to the first OIE Experts' meeting in September and WHO Experts' meeting in November 1991.

In contrast, the US and Australia started BSE surveillance, which indicates that these countries had more awareness of BSE risks than Japan (Table 4).

Then, in 1992, the risk of BSE was internationally recognized. For example, the OIE General Assembly agreed on trading conditions for bovine products from countries affected

by BSE. One chapter of the International Animal Health Code by OIE was dedicated to them. In accordance with the international movement, the Japanese Government enhanced the regulations on cattle, but it did not ban the use and importation of MBM. Since many cattle suffered from BSE in UK and MBM made from such cows were risky at the time, it might be said that this decision by the Government was a fatal error. For comparison, the US had already banned the importation of MBM from Europe since 1989 (Table 4).

In March 1996, the British Government expressed its view that BSE's possibility to infect human beings could not be denied, and many countries reinforced their regulations. On this occasion, the Japanese Government sent an expert delegation to the UK, and consequently it implemented a ban on importing bovine products including MBM, and issue administrative guidance on the use of MBM from ruminants. The administrative guidance was, however, not legally binding, but just 'advice'. In the UK, although it was found that MBM was the likely source of BSE in December 1987, it took a further 7 months before the feed ban was implemented. The error of the British Government's judgment had been seen already. However, the Japanese Government could not apply the lesson. On the other hand, the US and Australia banned the use of MBM in the following year (Table 4).

1-4. Discontinuation of the assessment process by EU on BSE-status of Japan

In March 1996, the British Government announced that there might be a link between BSE and new variant CJD. All European countries took it seriously and started to set an EU standard, the Geographical BSE Risk (GBR), a qualitative indicator of the likelihood of the presence of one or more cattle being infected with BSE, which served as the scientific basis for bans on imports. An excellent standard was developed by scientists all over the world, with a methodology based on information on eight factors, that is, structure and dynamics of the bovine population, surveillance of BSE, feeding, MBM-bans, etc. The GBR reports on 23 countries including Western Europe, Canada and the US, were released in the EU in July 2000 (5).

The Japanese Government also asked the EC to conduct risk assessment, which was necessary to export bovine products to the EU region, although it was a little bit strange that clearance was necessary to export to EU where BSE originally emerged.

However, this plan was aborted along the way because it became clear that Japan would be categorized as 'level 3', as well as France, where BSE had emerged already. MAFF officials were surprised and upset to learn of this. Although they discussed the matter with EU representatives repeatedly to change the poor evaluation, they deemed the conclusion would not be changed because of the MBM importation history of Japan. As a result, the EU lost the cooperation with the Japanese Government. Among the countries taking the assessment, only Japan cancelled the assessment (6).

In June 2001, an MAFF spokesperson told New York Times: "There is a concern that the announcement of an incorrect evaluation could inflame unnecessary anxiety among the people, and we have to avoid that" (7).

Two months later, the first BSE case happened in Japan, an obvious proof that the Japanese Government had prioritized the protection of meat producers and regarded the BSE in Europe as having nothing to do with Japan.

1-5. Governmental response from January to August in 2001

Since 1999 when BSE monitoring was enforced in the EU, the number of confirmed BSE cases had drastically increased. Hence, it was getting apparent that BSE had spread beyond expectation. Consequently, the BSE issue became a big political issue in Europe. It seemed that development of surveillance techniques and increased number of samples by the introduction of GBR contributed to the increase of BSE cases. In short, the 'perception' was much more essential than the 'fact' on this kind of risk management (6).

Reflecting the expansion of BSE issue, the Japanese Government finally banned importing MBM from EU countries in January 2001.

Around the same time, Japan started to prepare for risk assessment status under the OIE standards. Different to GBR, Japan was expected to under-evaluate its risk, because the OIE standard was based on the presence or absence of BSE. In order to pass the standard, it was necessary to examine at least 195 cattle a year (8). This number is statistically decided corresponding to the total cattle population over 30 months of age. MAFF planned to examine 300 cattle including spare cattle.

As the MAFF had difficulty to gather relevant samples, it repeatedly published official documents asking for support by local offices. One of the documents, "Notification by Animal Health Division of the MAFF on 2 April 2001" says, "BSE surveillance Program/Purpose: To verify that BSE does not exist within the borders" (9). Judging from this phrase, it can be said that the Japanese Government had little sense of urgency.

In the end, the first BSE-infected cow in Japan was found in those 300 samples.

2. After 10 September 2001

The Japanese Government appeared confused shortly after the first BSE case. It started to take drastic reformation of the administration of food safety. This became an epoch-making turn in the 120-year history of the MAFF.

2-1. Confusion arising from the first case

In 6 August 2001, a cow was slaughtered on suspicion of blood poisoning and it was in 10 September that the cow was confirmed positive. The confirmation took more than one month. Why so?

In the Japanese administration system, there is poor intercommunication and interaction between the central and the local governments as well as among the Ministries of the Central Government. In 24 August 2001, the Chiba Prefectural Livestock Hygiene Service Center, a local organization supervised by the MAFF, became aware of the possibility of BSE. A sample that the Livestock Hygiene Service Center suspected had been judged as 'non-infected' by the National Institute of Animal Health. In other words, the diagnosis at national level

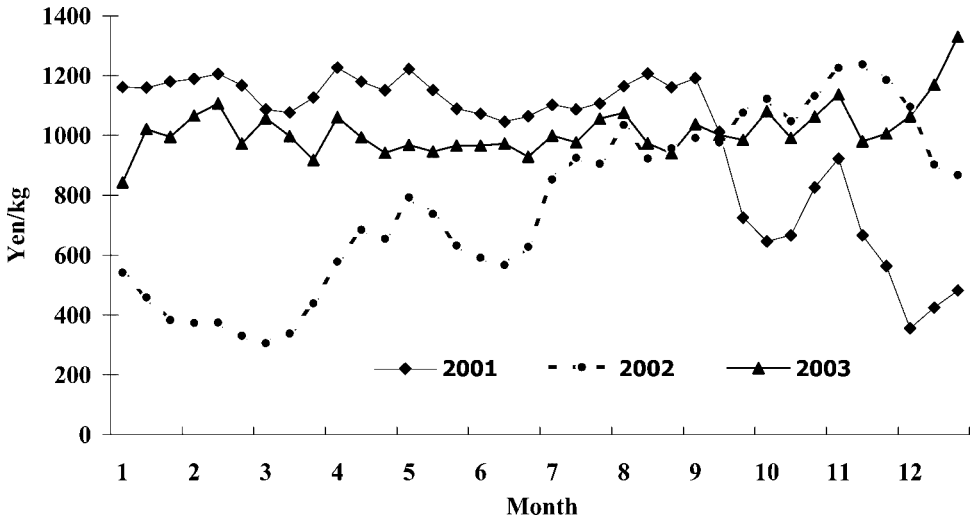

Fig. 1 Price history of domestic beef*.
* Standard Price by the MAFF

Table 5 Inconsistent laboratory results of BSE-Test for the first case*

Date	Result	Institute	Method
15 Aug	Not infected	National†	Western blot
24 Aug	Infected	Local‡	Histopathological
8 Sep	Not infected	National	Western blot
10 Sep	Infected	National	Immunohistochemical

* In 6 August 2001, the cow was slaughtered on suspicion of blood poisoning in Chiba Pref.
† National Institute of Animal Health
‡ Chiba Prefectural Livestock Hygiene Service Center

was different from that one at the local level. In that case, an additional test was supposed to be carried out at the National Institute (Table 5). In actual fact there was poor communication between the official bodies. One reason was the absence of the key official of the Institute due to his vacation. In addition, it was clarified later that the initial test at the national level was not conducted according to instructions. However, the major reason was that most Japanese officials had not expected a BSE outbreak in this country (10).

After the BSE confirmation, the Japanese Government was still confused. Firstly, although the presence of BSE was verified scientifically and scientists in Japan had the ability to make a diagnosis, the MAFF asked the British Government for a confirmed BSE diagnosis and presented a policy that cattle should be handled as quasi-BSE or pseudo-BSE until the diagnosis results were released. The diagnosis in UK took 10 days. Secondly, it became clear that the BSE-infected cow, which was supposed to be incinerated by the Government, had already been distributed after it was processed into MBM. Thirdly, it was sensationally reported that the Government rejected EU's status assessment, as previously noted (6).

Hereby, consumers came to distrust to the Government, and the sales and prices of beef significantly decreased. The price history of domestic beef is shown in Fig. 1 (11). There are several price floors, namely, October 2001, December 2001, March 2002, and June 2002. The market bottoms of October and December were directly caused by BSE, but those of 2002 were not. The cause of decline in 2002 will be discussed shortly. (Section 2-3).

2-2. Emergency measures by the Government

In order to improve the situation, the MAFF changed its policies drastically. First, the MAFF banned the feeding of MBM to cattle on 18 September 2001, and then banned the production and the importation of MBM temporarily. From 18 October 2001, it imposed the duty for incineration of all the Specified Risk Materials, and then started mandatory mass screening of all cattle that passed through the slaughterhouses ("blanket testing") in collaboration with MHLW (12).

In those days, it was thought that testing of cattle less than 30 months of age was not reasonable, because the disease was believed to be beyond the detection limit (13), and even now, EU countries generally exclude cattle younger than 24 months for BSE tests. Politicians from the governing liberal-democrats brought down this rigorous screening system (14, 15), while governmental officers and scientific advisors assumed that it should be enough to conduct the tests in the same way as EU (16, 17). The politicians, who might have tended to ignore the risk of BSE before its outbreak, made a policy based on a precautionary approach. This was remarkable[1].

But this policy became problematic in 2004 when a BSE-infected cow was found in the USA and the Japanese Government had to ban US beef importation for over one year, which will be discussed later (Section 3-2). The most important point is the establishment of an open panel on BSE issues which was established on 19 November 2001 as a consultative body to both the MAFF minister and the MHLW minister. Its internal

[1] In 2 October 2003, a 23-month and a 21-month-old bull were found in Japan as the 8th and the 9th cases of BSE, and were the youngest carriers of the disease all over the world. The result of western blot analysis of the 23-month bull showed this was a case of atypical BSE. The result was wholly unexpected even by scientists (29). This shows that the policy of blanket testing based on precautionary approach must be beneficial to reduce the health risk of BSE although the policy will not drastically reduce it.

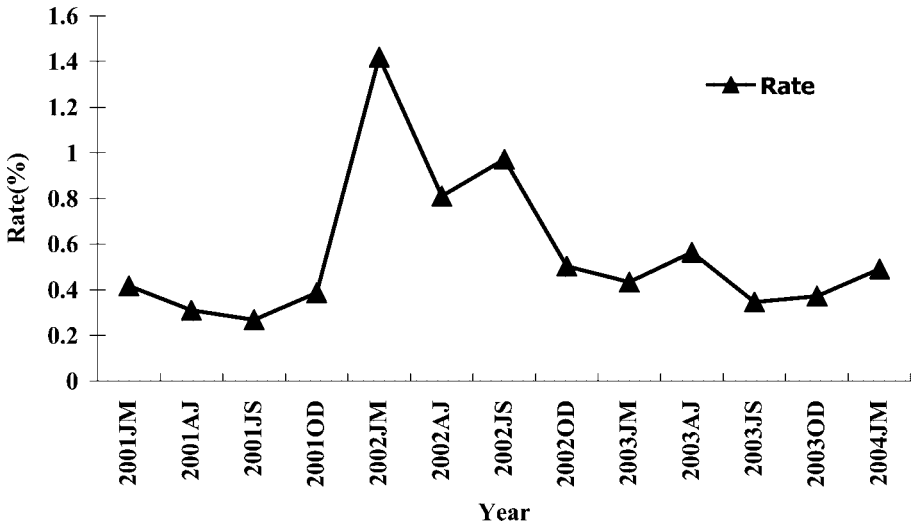

Fig. 2 Emerging rate of "food issues" in newspaper articles in Japan*.
* Food issues grabbed headlines in 2002.
"2001JM" means "from January to March in 2001", "AJ" for "from April to June", "JS" for "from July to September", and "OD" for "from October to December".
Data source: The Asahi Shimbun.

documents and proceedings were open to the public through the website. On 2 April 2002, the final report was published (4).

Firstly, the body consisted of researchers, journalists, and representatives of consumer groups, and did not include representatives of producers and governmental officers. Secondly, the members wrote a draft and then the officers put comments on it. In the past advisory body, the officers wrote a draft of report and then members of advisory body commented on it. Thirdly, a new administrative body, the Food Safety Commission was established on July 2003 based on its recommendation, although recent administrative reform was carried out so as to make it smaller (18).

The next year, upon the advice of the panel, the MAFF published a new policy guidance entitled "Reforming plan for food and agriculture" (19). It advocated, among other things, shifting attention from promoting producers to consumer protection, introducing comprehensive food-traceability elsewhere in the system, and setting up a new agency, the Food Safety Commission, etc. Although there were various reasons for this reformation, it was mainly triggered by the outbreak of BSE (20) which became an epoch-making turn in the 120 years history of MAFF (see also 1-1)

2-3. Public concerns shifted to other food issues

As the Government introduced a drastic reform of meat-related policies, consumers' anxiety over BSE ceased relatively fast. For example, after one year, the amount of consumption of beef returned to the pre-BSE case level (Fig. 1). Generally speaking, consumers seemed to recover from the fear of BSE.

But the BSE issue spawned many derivative scandals, and public concern shifted to other food issues (Fig. 2). In the following days, there were many food related incidents by food industries (21).

There was the case of Snow Brand Food Company that disguised imported beef to get subsidies. The Government began subsidizing meat industries to encourage them to purchase domestic beef that was processed before a nationwide mass screening of BSE began. The company brazenly mislabeled Australian beef as domestic beef to exploit the government buyback program.

The consumers doubted not only the Government but also food industries. In March 2002, the domestic beef market plunged again and, consequently, the Snow Brand Food Co. went bankrupt. Then it was revealed that many other meat industries, including the biggest packer in Japan, Nippon Ham Co. committed subsidy fraud. It increased extensively the public's distrust of all food industries. It can be said that this buyback program to reduce the BSE risk created a yet another type of risk, the socio-economic risk.

In May 2002, a flavoring agent company, Kyowa Perfumery & Chemical Co., was found to have used banned chemicals in its flavorings. In June, frozen spinach and honey imported from China were found to contain pesticides in excess of the upper limit set by the MHLW. In July, it was found that some unregistered pesticides had been widely used by farmers for years. Thereby food traceability drew public attention.

The MAFF announced its intention to achieve a comprehensive traceability elsewhere in the food system, a policy that seemed to be too radical even if it aimed to handle the situation. Recently, it seems to be getting less comprehensive, mainly because it cost too much. As of December 2004, only domestic beef traceability is established from farm to table by law (22). Nonetheless, the concept of food traceability will spread in our society gradually since we live in the "globalized world" where we all eat various foods are made on the other side of the world (20).

3. Some problems that still remain

We have seen outlines of the reform of the administration

of food safety raised by the BSE crisis in Japan. This is a kind of crisis that should improve the quality of public administration. However, as is usual with "reformation", when one problem is solved, another is created. Finally, I'll suggest two important points of consideration. One is concern about the political independence of the Food Safety Commission, and the other is the issue of "ban on US beef and blanket testing".

3-1. The Food Safety Commission

Here we should check briefly the organization of the new office, the Food Safety Commission. It consists of three parts. One is a Commission headed by seven commissioners all appointed directly by the Prime Minister. They are experts in various scientific fields, toxicology, organic chemistry, public health, etc.[2]

Under the Commission, 16 Expert Committees have been established. The Expert Committees include the "Planning Expert Committee," the "Risk Communication," the "Emergency Response," and 13 other Expert Committees, including the Food Additives, Pesticides, Microorganisms and so on. The Secretariat is headed by the Director-General and Deputy Director-General, and is comprised of four divisions. Their mission, by law, is to support the Commission and the expert committee (23).

I schematically examined the features of this Commission (18), as follows:

Firstly, FSC was modeled mainly after the EFSA (European Food Safety Authority) where its function includes risk assessment and risk communication that is in line with the basic policy of the Codex Alimentarius Commission (CAC), which says that "There should be a functional separation of risk assessment and risk management" (24). However, CAC does not necessarily recommend organizational separation. The reason that the Japanese model of the FSC adopted not only functional but organizational separation was due to the public distrust in the existing bodies of food safety administration, MAFF and MHLW. In that regard, FSC is more similar to the EFSA of EU than the Food Standards Agency in the United Kingdom.

Next, although the FSC was modeled after the EFSA, it differs in some important respects. In the case of EFSA the management board appoints scientists and experts. The management board consists of 15 members including stakeholders, such as representatives of industries and consumers. On the other hand, in the case of the FSC, the Prime Minister directly appoints commissioners and members of expert committees. There is no representation from the management board of the EFSA. It might be said that the functional equivalent would be the Planning Expert Committee and Risk Communication Expert Committee. Indeed those committees comprise some members from private companies, consumers through public solicitation, and delegates from consumer groups. But the committees are set under the control of commissioners. In the context of Japanese administration, this means that bureaucrats actually have the power to shuffle the personnel. That is, the Food Safety Commission has less autonomy.

Furthermore, the design of the FSC follows not only the EFSA of EU but the Nuclear Safety Commission (NSC) in Japan. The FSC and the NSC are both parts of the administrative commissions in the Cabinet office corresponding to the body based on Article 8 of the National Government Organization Law (NGOL), which defines substantively the hierarchy of administrative units of the Government. For example, the Fair Trade Commission, an administrative body in charge of the implementation of the Antimonopoly Act, is based on Article 3 of the NGOL. Briefly speaking, a commission on Article 3 has the same status as a Ministry, although a body on Article 8 does not. Also in this regard, it can be said that the FSC would be less independent than the EFSA.

3-2. Blanket testing and the Japanese ban on US beef

In December 2003, the Japanese Government placed a ban on importing American beef due to the BSE case in USA. Japan has been demanding that the United States test all its cattle going to market as a condition for ending its ban on American beef, a demand which the USA adamantly rejected, rendering the negotiations deadlocked for half year.

Then the Japanese Government changed its policy in the fall of 2004, discontinuing the current practice of blanket testing by exempting cattle aged 20 months or younger (25). This new policy was also based on an interim report by experts of the FSC (26). However, the Japanese people might have an unfavorable impression of this policy change, as they might suspect the Japanese Government did it due to massive pressure from US, and to put the commercial interest of the fast-food industry, etc. above public health.

Here we should heed the advice of Stanley Prusiner, who was awarded the Nobel Prize in medicine for his work in discovering the "prion": the agent of scrapie, CJD, and BSE. In January 2004 he gave a statement at the Food Safety Caucus of the House of Representatives of the United States supporting "the Japanese policy of testing every cow and bull destined for consumption by humans". He insisted that:

> The United States has the same problem that the Japan has, but the Japanese test all of the cattle that they slaughter. This issue particularly troubles children when they learn that the time from exposure to prions until the onset of neurological disease can exceed 50 years. … Only the Japanese solution of testing every slaughtered cow or bull will eliminate prions from the food supply and restore consumer confidence. Certainly, the citizens of the most prosperous and accomplished nation on our planet deserve to eat meat that is devoid of prions. (27)

It should be appreciated that he knew everything about the scientific limit of the blanket testing. Still, he insisted on blanket testing. Hence, his remarks should be regarded as a weighty warning.

Here we should remember again that we still know relatively little about BSE, so it is difficult to choose the suitable policy only based on our scientific considerations. In the risk management for this kind of case, we should take the

[2] In particular, Commissioner Nakamura is not a scientist but a former journalist of NHK, a state-managed broadcasting corporation, and could be regarded as an expert of "risk communication".

precautionary approach. In this context, the Japanese test on all cattle is not a waste of money but is reasonable (28).

In contrast, after the interim report of the FSC was published, a lot of local governments stated that they would maintain to the blanket testing on their own budget. Therefore the Government added a plan to subsidize the full costs for local governments that want to keep blanket testing all domestic cattle for three years. This means blanket testing will not be discontinued for domestic cattle, and that the Government will allow different safety measures for imported and domestic beef. It is a kind of "double standard", and creates one more problem for the future, although now the USDA is reluctantly accepting the new policy.

Furthermore, Japan and US are still competing with one another on an important point (as of Dec 2004). That is how to check the age of cattle. Cattle are considered to be aged 30 months or older when they have more than two permanent incisor teeth erupted. But there is no easy measure to check whether the age of cattle is 20 months or younger. The schedule for negotiation is unclear.

4. Summary

Before the first case, most of Japanese people including the Government, regarded the BSE as having nothing to do with Japan. The BSE case forced Japanese administration system to change itself drastically, as happened in Europe. It is also important to note the establishment of the Food Safety Commission, introduction of food traceability and turning attention from producers to consumers.

As the FSC is, in a manner, a hybrid body between the EFSA of EU and the NSC of Japan, it may need to be improved in the future.

Furthermore, the BSE impact was significant not only to food administration bodies but to the agriculture and food industries. It revealed lots of flaws in the marketing of food to the public. Such flaws have been concealed for a long time.

On the issue of the Japanese ban on US beef, Japan and US are still in dispute (as of Dec 2004).

Coda

The experience of Japan in BSE provides us many lessons.

As experts and public officials in Japan were aware of the BSE episode of Europe, they failed to put the knowledge to good use on policy making. I feel that the prime reason for failure is that policy makers were slow to realize how our world has changed. In the globalized world such as meat-and-bone meal, viruses, terrorists, and computer viruses, easily cross borders, so it is important for administrators to constantly monitor the risks all over the world and to make use of information on them within the realities of policy-making.

Furthermore, the difficulty of risk governance should be noted. Recently governments are often obliged to manage risks where significant scientific uncertainty exists. At the same time, they must find a balance between new or emerging risks and the other potential benefits or opportunities. Obviously, it is a very difficult job. For example, the blanket testing of cattle might be too severe a policy, scientifically speaking. However, it might be a rational to do socially when Japanese people have little confidence in the administration of food safety. Maybe the USDA may find it difficult to accept this kind of rationale. Even so, I suggest it might not be easy to clarify the boundary between science and policy where there is a significant scientific uncertainty. In this context, it would be meaningful to examine again the separation of risk assessment from risk management in food administration in Japan.

Now, some experts warn about a pandemic of a new-type of influenza, which is another global risk. We should apply the lessons of the past. I believe that the most important lesson is that "concealment does not pay".

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